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APPLICATION NO	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO	CONFIRMATION NO
09/913,771	02/08/2002	Gary Charles Rex	UC17754-2	3742

109 7590 02/19/2004

THE DOW CHEMICAL COMPANY
INTELLECTUAL PROPERTY SECTION
P. O. BOX 1967
MIDLAND, MI 48641-1967

EXAMINER	
VIJAYAKUMAR, KALLAMBELLA M	

ART UNIT	PAPER NUMBER
1751	

DATE MAILED: 02/19/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.	Applicant(s)	
09/913,771	REX, GARY CHARLES	
Examiner	**Art Unit**	
Kallambella Vijayakumar	1751	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *Application filed 02/08/2002*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-28* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-28* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date *1*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

Detailed Action

- This is a 371 of PCT/US00/04262 filed 02/18/2000 and claims the benefit of Sl. No. 60/120,677 filed 02/19/1999. Claims 1-28 are currently pending with the application.
- The specification has not been checked to the extent necessary to determine the presence of all possible minor errors. Applicant's cooperation is requested in correcting any errors of which applicant may become aware in the specification.
- The listing of references in the specification is not a proper information disclosure statement. 37 CFR 1.98(b) requires a list of all patents, publications, or other information submitted for consideration by the Office, and MPEP § 609 A(1) states, "the list may not be incorporated into the specification but must be submitted in a separate paper." Therefore, unless the examiner on form PTO-892 has cited the references and/or the applicants have them provided on PTO 1449, they have not been considered.

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

- Claims 1, 11, 13, 17 and 25 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.
    - Claims 11, 13, and 25 recite a limitation "thermoplastic additive" in lines 8, 8 and 2 respectively. There is insufficient antecedent basis for this limitation in the claim. It

is not clear whether it means the recited thermoplastic polymer or a different thermoplastic additive.

- The term "effective amount" in claims 1 and 17 is a relative term which renders the claim indefinite. The term "effective amount" is not defined by the claim, the specification does not provide a standard for ascertaining the requisite degree, and one of ordinary skill in the art would not be reasonably appraised of the scope of the invention. It is not clear what amounts of the lubricants constitute the phrase "effective amount" enhancing the electrical conductivity to what extent, and the public will not be appeased about the metes and bounds of this limitation without undue burden of experimentation.

Claim Rejections - 35 USC § 102

Claim Rejections - 35 USC § 103

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(a) the invention was known or used by others in this country, or patented or described in a printed publication in this or a foreign country, before the invention thereof by the applicant for a patent.

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

The factual inquiries set forth in *Graham* **v.** *John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

The use of phrase "to enhance electrical conductivity of the composition" in the claims 1, and 17 have not been treated with patentability. A recitation of the intended use of the claimed invention must result in a structural difference between the claimed invention and the prior art in order to patentably distinguish the claimed invention from the prior art. If the prior art structure is capable of performing the intended use, then it meets the claim. In a claim drawn to a process of making, the intended use must result in a manipulative difference as compared to the prior art. See In re Casey, 152 USPQ 235 (CCPA 1967) and In re Otto, 136 USPQ 458, 459 (CCPA 1963).

The examiner construes this language as "Intended Use" and not treated with merits for patentability.

1. Claims 1, 4-6, 17-23 and 28 are rejected under 35 USC 102 (b) as anticipated by Rex (US Patent 5,401,803).

Rex discloses a molding process and molding compositions comprising of about 20-60 wt% unsaturated resin such as polyesters, 5-60 wt% of olefenically unsaturated monomer such as styrene, 1-40 wt% ethylene-vinyl-acetate copolymer with a molecular weight of 5,000 to 500,000, 3 wt% zinc stearate and 10 wt% carbon (Col-2, Ln 53-56; Col-3, Ln 12-13; Col-4, Ln 3-4, 28-55; Col-5, Example-1; Col-7, Table-2, Sample-7, Ln 45-58). Rex also discloses the molding operation in a two zone oil heated system operating at a temperature of 180-325F and a pressure of 100-1000 psia, and further teaches the molding process to form the article would not be critical. Ethylene-vinyl-acetate copolymer with a molecular weight of 5,000 to 500,000 meets the limitation of a thermoplastic polymer in claims 17 and 28. Office personnel are to give claims their broadest reasonable interpretation in light of the supporting disclosure. In re Morris, 127 F.3d 1048, 1054-55, 44 USPQ2d 1023, 1027-28 (Fed. Cir. 1997). The disclosure by Rex as a whole, particularly the cited sections meets all limitations of the instant claims.

The reference is anticipatory.

2. Claims 1-3 and 7-8 are rejected under 35 USC 102 (b) as anticipated by Rex (US Patent 5,401,803) in view of Degussa Carbon Data Sheet from Degussa or Miyakawa et al (US Patent 5,707,699).

Normally, only one reference should be used in making a rejection under 35 U.S.C. 102. However, a 35 U.S.C. 102 rejection over multiple references has been held to be proper when the extra references are cited to (SEE MPEP 2131.01).

(A) Prove the primary reference contains an "enabled disclosure, "
(B) Explain the meaning of a term used in the primary reference; or
(C) Show that a characteristic not disclosed in the reference is inherent

The disclosure on the molding composition and making of an electrically conductive composition/molded article by Rex are set forth as above. Rex does not disclose the particle size of the carbon or the surface resistivity of the product.

The molding composition by Rex comprises of a dispersion of carbon in thermoplastic polymer and other components of the mix, wherein conductivity would be imparted to the product by the dispersed carbon particles. It is the examiner's position that the size of the carbon particles and the its agglomerates used in making polymer composites and the surface conductivity of the resultant product would be inherent as shown by the product data sheet for carbons by Degussa and by the surface resistivity data for the electro-conductive resin comprising a thermoplastic resin and carbon black by Miyakawa et al (Abstract). All the limitations of the instant claims are met.

The reference is anticipatory.

3. Claims 1-8, 17-23 and 28 are rejected under 35 U.S C. 103(a) as being unpatentable over Rex (US Patent 5,401,803) in view of Degussa Carbon Data Sheet from Degussa further in view of Miyakawa et al (US Patent 5,707,699).

The disclosure on the composition and making of the molded article by Rex in view of Degussa are set forth as above under rejection-1.

Rex does not disclose the particle size of the carbon or the surface resistivity of the polymer or the electrostatic coating of the molded product.

Miyakawa et al teach the composition of the elecroconductive resin comprising of thermoplastic resins, polyester and carbon, the same ingredients used and/or claimed by the applicants, and the product having a surface resistivity from 10^2 to $10^{10}\Omega$ and forming the product by injection molding. Miyakawa et al further teach the varying of amount of carbon in the composition to improve the electrical conductivity without affecting structural integrity, and the particle/agglomerate size of the carbon would be obvious over Degussa Data (Abstract, Col-3, Ln 42-65; Col-6, Ln 24; Col-9-12, Table-4).

It would have been obvious for one of ordinary skill in the art to modify the composition and/or process of Rex with the teachings of Miyakawa et al by choosing electro-conductive carbon/s in the composition by choice of design to benefit from improved electrical conductivity of the polymer/molded article, because both the teachings are in the analogous art teaching electro-conductive polymer resins, wherein Rex teaches the modification of polymer compositions and Miyakawa et teach the use of electro-conductive resin compositions and the benefits of varying the amount of conductive carbon in the composition to control the conductivity of the composite, and with the expectation of reasonable success in obviously arriving at the limitations of the instant claims by the applicants.

4. Claims 1-10 are rejected under 35 U.S.C. 102(b) as anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over Cobbledick et al (US Patent 5,614,581).

Cobbledick et al disclose the making of conductive molded articles that could be electro-statically painted, by injection molding, compression molding or transfer molding, using a

composition comprising epoxy based oligomers having at least two acrylates, a monomer such as styrene, an adhesive agent such as polyvinyl acetate with a molecular weight of 50K to 200K, stearates including that of zinc as mold releasing agents, and conductive carbon such as Vulcan (Col-1, Ln- 22-33, 52-60; Col-2, Ln 39-65; Col-3, Ln 17-54; Col-4, Ln 11-24, Col-6, Ln 6, Lns-47-57; Col-8, Table-1) and the compositions in Table-1 would meet the limitations of the instant claims. The stearates/lubricants aiding the dispersion of the carbon thereby improving the conductivity would be inherent. The conductivity data (Samples 1-3) in Tables-II and III (Col-9-10) would meet the surface resistance limitations in the claims 7 and 8. The coating of the surface of the article formed from the molding composition would be anticipatory. All the limitations of the instant claims are met.

The reference is anticipatory.

In the alternative that the disclosure by Cobbledick et al be insufficient to arrive at the limitations of the instant claims by the applicants, it would have been obvious to one of ordinary skill in the art to modify the composition of Cobbledick by varying the polymers and/or carbon by choice of design to benefit from improved structural and coating properties, and electrical conductivity, because Cobbledick teaches these aspects, and with the expectation of reasonable success in arriving at the limitations of instant claims by the applicants.

5. Claims 11-28 are rejected under 35 U.S.C. 103(a) as being unpatentable over Miyakawa et al (US Patent 5,707,699) in view of Maeda et al (JP 58-176224) further in view of by Rex (US Patent 5,401,803).

Miyakawa et al teach the composition of the electro-conductive resin comprising of thermoplastic resins consisting of polyphenylene ether, polystyrene and an ABS resins, conductive carbon black in the amounts of 5-50 parts by weight of thermoplastic resin, and olefin resin such as a copolymer of ethylene or propylene in the amounts of 1-30 parts by weight of thermoplastic and carbon, and optionally a block copolymer of styrene-diene in the amounts of 0.2 to 10 parts by weight of 100 parts by weight of thermoplastic/ carbon/olefin components combined, and the product having a surface resistivity of 10^2 to 10^{10} Ω. Miyakawa et al further teach the addition of a lubricant/disperser/mold release agent, plasticizer and reinforcing agents into the polymer composition; kneading and pelletizing of the components of the composition in a Branbury mixer and extruder, and further forming the product by injection molding. The compositions listed in Tables-2 and the surface resistivities listed Table-4 meet the limitations of the instant claims by the applicants (Abstract, Col-2, Ln-44-59; Col-3, Ln 42-65; Col-5, ln-55 to Col-6, Ln 24; Col-8-12, Tables 2 and 4).

Miyakawa does not disclose the molecular weight of the thermoplastic resins, thermoplastic additive/copolymer or the process conditions used in the making of the composite, although they could be obvious in the injection molding used.

Maeda et al disclose a molding composition comprising of thermoplastic resins having a surface specific resistance of 100W108Ω (eg. PE, PS or styrene-acn copolymer, MW 10,000W1,000,000) and conductive carbon with excellent shape and coating properties.

The disclosure on the composition and method of making electrically conductive composition/molding of conductive resin compositions by Rex et al is set forth as in

rejection-1. Rex discloses the benefits of using thermoplastic additive such as polyvinyl acetate homopolymer or copolymer with a molecular weight in the range of 50K to 180K and zinc stearate as the lubricant, including molding of the polymer composition forming the article and the process conditions for making article by molding. The molding conditions would be an obvious variation of working parameters for the composition and the apparatus.

It would have been obvious to one of ordinary skill in the art to modify the electro-conductive polymer composition of Miyakawa et al by choosing the thermoplastics of specific molecular weight per the teachings of Maeda et al by choice of design to benefit from improved conductivity and structural properties, and further improve the composition and/or process conditions by using thermoplastic additive such as polyvinyl acetate copolymer of specific molecular weight, zinc stearate as the lubricant and the process conditions for molding per the teachings of Rex to benefit from improved properties, dispersion of electroconductive agent and processing of the composition in the mold, because all the teachings by Miyakawa, Maeda and Rex are in the analogous art of moldable conductive resins, and with the expectation of reasonable success in arriving at the limitations of instant claims by the applicants.

Conclusion

- The prior art not relied upon in making the rejection, but pertinent to the disclosure. Rex (US Patents 5,811,478 and 5,589,538), Yen et al (US Patent 6,001,919), Landru et al (US Patent

5,869,557), Mitsui (JP 61-049823), Inoue (US Patent 5,371,134), Silvi et al (US Patent 5,843,340), Yoshimura et al (US Patent 5,434,220), Fujii et al (US Patent 5,547,609), Migawa et al (JP 08-283584), and Data sheet from Readme Advanced Materials (1997).

- Any inquiry concerning this communication or earlier communications from the examiner should be directed to Kallambella Vijayakumar whose telephone number is 571-272-1324. The examiner can normally be reached on M-Th, 07.00 - 16.30 hrs, Alt. Fri: 07.00-15.30 hrs.
- If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Dr. Yogendra Gupta can be reached on 571-272-1316. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.
- Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

KMV
Feb/ 07/2004